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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648-XA128]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Ward Cove Cruise Ship Dock Project, Juneau, Alaska

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; issuance of an incidental harassment authorization.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an incidental harassment authorization (IHA) to Power Systems & Supplies of Alaska (PSSA) to incidentally harass, by Level A and B harassment only, marine mammals during construction activities associated with the Ward Cove Cruise Ship Dock Project near Ketchikan, Alaska.

DATES: This authorization is effective for one year from the date of issuance.

FOR FURTHER INFORMATION CONTACT: Dwayne Meadows, Ph.D., Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: <https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act>. In case of problems accessing these documents, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the “take” of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed incidental take authorization may be provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other “means of effecting the least practicable adverse impact” on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as “mitigation”); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth.

The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

Summary of Request

On December 30, 2019, NMFS received a request from PSSA for an IHA to take marine mammals incidental to Ward Cove Cruise Ship Dock Project near Ketchikan, Alaska. The application was deemed adequate and complete on February 5, 2020. PSSA's request is for take of four species by Level B harassment and/or Level A harassment. Neither PSSA nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

Description of the Specified Activity

Overview

The project consists of the construction of a cruise ship dock for two cruise ships in Ward Cove, approximately 8 kilometers (5 miles) north of downtown Ketchikan, Alaska. PSSA would install a pile supported 500-foot by 70-foot (152 by 21 m) floating pontoon dock, mooring structures, and shore-access transfer span and trestle. The project includes the following in-water components: driving 102, 30-48 inch diameter steel pipe piles to support the structures and removal of 48 of these piles (all 30-inch diameter) that are being used solely as templates to guide installation of larger permanent piles. It is expected to take no more than 105 days of in-water work. Pile driving would be by vibratory pile driving until resistance is too great and driving would switch to an impact hammer. Removal of temporary piles would use vibratory methods only. Forty larger 36- and 48-inch piles would also be rock anchored into place using a down-the-hole (DTH) hammer.

A detailed description of the planned project is provided in the **Federal Register** notice for the proposed IHA (85 FR 12523; March 3, 2020). Since that time, no changes have been made to the planned activities. Therefore, a detailed description is not

provided here. Please refer to that **Federal Register** notice for the full description of the specific activity.

Mitigation, monitoring, and reporting measures are described in detail later in this document (please see **Mitigation** and **Monitoring and Reporting**).

Comments and Responses

A notice of NMFS's proposal to issue an IHA to PSSA was published in the **Federal Register** on March 3, 2020 (85 FR 12523). That notice described, in detail, PSSA's activity, the marine mammal species that may be affected by the activity, and the anticipated effects on marine mammals. During the 30-day public comment period, NMFS received public comment from two individuals generally opposed to cruise ships, but with no comments specific to the authorization. The U.S. Geological Survey noted they have "no comment to offer at this time". Defenders of Wildlife (Defenders) provided comments we address below. A comment letter from the Marine Mammal Commission (Commission) was received pursuant to the Commission's authority to recommend steps it deems necessary or desirable to protect and conserve marine mammals (16 U.S. C. 1402.202(a)). We are obligated to respond to the Commission's recommendations within 120 days, and we do so below.

Comment: Defenders requested we extend the comment period.

Response: In their comment letter Defenders provided specific comments on the action. They did not note knowledge of any other members of the public that would be providing public comments. We received a larger than normal number of public comments on this action. The project is already underway (with additional mitigation measures that are intended to avoid marine mammal take). Thus there is no evidence than

any member of the public would be disadvantaged by not being able to comment on this action and the current work does not benefit from MMPA coverage until an authorization is issued; therefore we decline to extend the comment period.

Comment: Defenders notes that the Army Corps of Engineers permit and the ESA Section 7 Letter of Concurrence (LOC) provide different dates for when activities will need to cease to protect ESA listed species and that the IHA is unclear about these limits.

Response: The ESA LOC does state that in-water work will be completed by May of each year and the Army Corps permit does state that PSSA will follow the LOC, despite the conflicting language elsewhere. Should in-water work extend beyond May, the LOC would no longer be applicable, but that is not a requirement of this MMPA authorization. However, in fact the LOC has been extended through September 30, 2020.

Comment: Defenders noted that Mexico DPS humpback whales may increase in frequency as summer progresses. They suggested that we should require in-water work to be completed by the end of May.

Response: PSSA chose not to request take of humpback whales and to instead shutdown work should whales enter the shutdown zone in Tongass Narrows (they are not likely to enter Ward Cove). Based on the first two months of project reports submitted to NMFS Alaska Region Office in response to the LOC, PSSA has observed two pods of humpback whales and were successfully able to observe them and shut down the project without take occurring. This justifies our initial determination that the Protected Species Observers (PSOs) will see humpback before they cross through the relatively discrete area of Tongass Narrows that might be ensonified above the threshold. As noted above, the LOC has been extended through September 30, 2020.

Comment: The Commission recommends that NMFS refrain from issuing renewals for any authorization and instead use its abbreviated **Federal Register** notice process. They further recommend that if NMFS uses renewals, we (1) stipulate in all **Federal Register** notices and authorizations that a renewal is a one-time opportunity and, (2) if NMFS refuses to stipulate a renewal being a one-time opportunity, explain why it will not do so.

Response: NMFS does not agree with the Commission and, therefore, does not adopt the Commission's recommendation. NMFS will provide a detailed explanation of its decision within 120 days, as required by section 202(d) of the MMPA.

Comment: The Commission recommended that NMFS continue to include in all draft and final IHAs the explicit requirements to cease activities if a marine mammal is injured or killed during the proposed activities until NMFS reviews the circumstances involving any injury or death that has been attributed to the activities and determines what additional measures are necessary to minimize additional injuries or deaths.

Response: NMFS concurs with the Commission's recommendation as it relates to this IHA, and construction IHAs in general, and has added the referenced language to the **Monitoring and Reporting** section of this notice and the Reporting section of the issued IHA. We will continue to evaluate inclusion of this language in future IHAs.

Comment: The Commission again recommends that NMFS (1) have its experts in underwater acoustics and bioacoustics review and finalize its recommended proxy source levels for both impact and vibratory installation of the various pile types and sizes and (2) make available to action proponents the database of proxy source levels.

Response: NMFS appreciates the Commission's interest in this issue and, as we have indicated previously, we are working on developing such a product.

Comment: The Commission made a number of comments with regard to DTH hammering. The Commission recommends NMFS consider DTH hammering as impulsive. They further recommend that NMFS (1) require action proponents to provide the necessary operational information and characteristics for DTH hammering in each relevant application irrespective of what terminology is used, (2) encourage action proponents to use consistent terminology regarding DTH hammering in all relevant applications, and (3) use consistent terminology in all future **Federal Register** notices and draft and final authorizations that involve DTH hammering. Finally, the Commission recommends that NMFS re-estimate the Level A harassment zones for DTH hammering based on source levels provided either by Reyff and Heyvaert (2019) or Denes *et al.* (2019) and increase the numbers of Level A harassment takes accordingly.

Response: We agree with the Commission that as knowledge of the variety of DTH methods and uses grows, more information from applicants on operational information and characteristics of DTH, and more consistent terminology, is beneficial.

NMFS acknowledges that DTH piling operations can include both impulsive and continuous noise components. The limited available data show that the specific acoustic characteristics of any particular DTH piling operation can vary significantly, based on the extent of the continuous non-pulse acoustic components of the drilling/pumping and the impulsive acoustic components of the hammering, as well as the nature of the environment (especially bottom characteristics). Currently, given the potential variation in the acoustic output from any specific operation and the limited in situ measurements of

DTH hammering available, NMFS is taking a conservative approach until more data are available. Specifically, we recommend estimating the potential impulsive components (and using the associated thresholds) of the operations for the purposes of predicting Level A harassment and estimating the potential continuous components (and using the associated threshold) for the purposes of predicting Level B harassment. Further, given the strengths, weaknesses, and characteristics of the available data, until additional measurements and analyses are available for consideration, we recommend using the Denes *et al.* (2019) source levels as a proxy source level for the purposes of the Level A harassment assessment and the Denes *et al.* (2016) for the purposes of the Level B harassment assessment.

We note that Denes *et al.* (2019) used a 42-inch drill bit to drill much larger holes than the 33-inch drill bit and holes of this project. The larger drill bits drill an area 38.2 percent larger, likely creating louder sounds from the larger area of contact with rock, which means that the Level A harassment zones may be overestimated to some degree for this project. As a result of the increased size of the Level A harassment zones we have added harbor and Dall's porpoises to the 200 m shutdown zone requirement and added 15 Level A harassment takes for each species.

We note also that the Commission erroneously claimed PSSA was using a top head drive system, but the application clearly notes the system is a DTH system.

Comment: The Commission recommends that NMFS require all applicants that propose to use a DTH hammer to install piles, including PSSA, to conduct in-situ measurements, ensure that signal processing is conducted appropriately, and adjust the Level A and B harassment zones accordingly.

Response: As required by their ESA Section 7 concurrence letter, PSSA is conducting in-situ sound monitoring of multiple piles. We will evaluate the need to require such measures for future projects on a case-by-case basis, though we acknowledge the general need for more data on these sources.

Changes from the Proposed IHA to Final IHA

The sound source levels used to calculate impact pile driving harassment ones were measured at 11 m from the source and we failed to correct them to the standard 10 m source level distance criterion used in calculations. As a result harassment zone sizes increased slightly (see **Estimated Take** section below for full details). As a result of these changes, and observations of Steller's sea lions in the project area since the project started, we are adding take of Steller's sea lions to the authorization at the request of the applicant (see **Estimated Take** section below for full details).

As discussed above in the **Comments and Responses** section, we are changing the approach to DTH hammering so that we estimate the potential impulsive components (using the associated thresholds) of the operations for the purposes of predicting Level A harassment and estimate the potential continuous components (using the associated threshold) for the purposes of predicting Level B harassment. We use the Denes *et al.* (2019) source levels as a proxy source level for the purposes of the Level A harassment assessment. As a result of the increased size of the Level A harassment zones we have added harbor and Dall's porpoises to the 200 m shutdown zone requirement and added 15 Level A harassment takes for each species. We add the explicit requirements to cease activities if a marine mammal is injured or killed during the proposed activities until NMFS reviews the circumstances to the **Monitoring and Reporting** section of this

notice and the Reporting section of the issued IHA. Minor typographical errors were also corrected.

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS's Stock Assessment Reports (SARs; <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>) and more general information about these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS's website (<https://www.fisheries.noaa.gov/find-species>).

Table 1 lists all species with expected potential for occurrence in the project area near Ketchikan, Alaska and summarizes information related to the population or stock, including regulatory status under the MMPA and ESA and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2019). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS's SARs). While no mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated

within a particular study or survey area. NMFS's stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS's U.S. Alaska SARs (e.g., Muto *et al.* 2019). All values presented in Table 1 are the most recent available at the time of publication and are available in the 2019 draft SARs (Muto *et al.*, 2019).

Table 1 -- Marine Mammals that Could Occur in the Proposed Project Area

Common name	Scientific name	MMPA Stock	ESA/MMPA status; Strategic (Y/N) ¹	Stock abundance Nbest, (CV, N _{min} , most recent abundance survey) ²	PBR	Annual M/SI ³
Order Cetartiodactyla – Cetacea – Superfamily Mysticeti (baleen whales)						
Family Eschrichtiidae						
Gray Whale	<i>Eschrichtius robustus</i>	Eastern North Pacific	-, -, N	26,960 (0.05, 25,849, 2016)	801	138
Family Balaenidae						
Humpback whale	<i>Megaptera novaeangliae</i>	Central North Pacific	E, D, Y	10,103 (0.3; 7,891; 2006)	83	25
Minke whale	<i>Balaenoptera acutorostrata</i>	Alaska	-, N	N.A.	N.A.	N.A.
Fin whale	<i>Balaenoptera physalus</i>	Northeast Pacific	E, D, Y	N.A.	5.1	0.4
Order Cetartiodactyla – Cetacea – Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae						
Killer whale	<i>Orcinus orca</i>	Alaska Resident	-, N	2,347 (N.A.; 2,347; 2012)	24	1

		West Coast Transient	-, N	243 (N.A., 243, 2009)	2.4	0
		Northern Resident	-, N	302 (N.A.; 302, 2018)	2.2	0.2
Pacific white-sided dolphin	<i>Lagenorhynchus obliquidens</i>	North Pacific	-, N	26,880 (N.A.; N.A.; 1990)	N.A.	0
Family Phocoenidae						
Harbor porpoise	<i>Phocoena phocoena</i>	Southeast Alaska	-, Y	975 (0.10; 896; 2012)	8.95	34
Dall's porpoise	<i>Phocoenoides dalli</i>	Alaska	-, N	N.A.	N.A.	38
Order Carnivora – Superfamily Pinnipedia						
Family Otariidae (eared seals and sea lions)						
Steller sea lion	<i>Eumetopias jubatus</i>	Eastern U.S.	-, N	43,201 (N.A.; 43,201; 2017)	2,592	113
Family Phocidae (earless seals)						
Harbor seal	<i>Phoca vitulina richardii</i>	Clarence Strait	-, N	27,659 (N.A.; 24,854; 2015)	746	40

¹ - Endangered Species Act (ESA) status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

² - NMFS marine mammal stock assessment reports online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>. CV is coefficient of variation; Nmin is the minimum estimate of stock abundance. In some cases, CV is not applicable (N.A.).

³ - These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (e.g., commercial fisheries, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value or range. A CV associated with estimated mortality due to commercial fisheries is presented in some cases.

A detailed description of the of the species likely to be affected by this project, including brief introductions to the species and relevant stocks as well as available information regarding population trends and threats, and information regarding local

occurrence, were provided in the **Federal Register** notice for the proposed IHA (85 FR 12523; March 3, 2020); since that time, we are not aware of any changes in the status of these species and stocks; therefore, detailed descriptions are not provided here. Please refer to that **Federal Register** notice for these descriptions. As noted above however, we are adding take of Steller's sea lions to the authorization at the request of the applicant so a description of this species follows.

Steller's Sea Lion

Steller sea lions (*Eumetopias jubatus*) were listed as threatened range-wide under the ESA on November 26, 1990 (55 FR 49204). Steller sea lions were subsequently partitioned into the western and eastern Distinct Population Segments (DPSs; western and eastern stocks) in 1997 (62 FR 24345, May 5, 1997). The eastern DPS was delisted in 2013. The eastern DPS is the only population of Steller's sea lions thought to occur in the project area. The current minimum abundance estimate for the eastern DPS of Steller sea lions is 43,201 individuals (Muto *et al.* 2019).

The nearest known Steller sea lion haulout is located approximately 17 miles (27 km) west/northwest of Ketchikan on Grindall Island. Summer counts of adult and juvenile sea lions at this haulout since 2000 have averaged approximately 191 individuals, with a range from 6 in 2009 to 378 in 2008. No sea lion pups have been observed at this haulout.

No systematic studies of sea lion abundance or distribution have occurred in Tongass Narrows. Anecdotal reports suggest that Steller sea lions may be found in Tongass Narrows year-round, with an increase in abundance from March to early May during the herring spawning season, and another increase in late summer associated with

salmon runs. Overall sea lion presence in Tongass Narrows tends to be lower in summer than in winter (FHWA 2017). During summer, Steller sea lions may aggregate outside the project area, at rookery and haulout sites. Monitoring during construction of the Ketchikan Ferry Terminal in summer (July 16 through August 17, 2016) did not record any Steller sea lions.

Sea lions are known to transit through Tongass Narrows while pursuing prey. Steller sea lions are known to follow fishing vessels, and may congregate in small numbers at seafood processing facilities and hatcheries or at the mouths of rivers and creeks containing hatcheries, where large numbers of salmon congregate in late summer. Three seafood processing facilities are located east of the proposed project location on Revilla Island, and two salmon hatcheries operated by the Alaska Department of Fish & Game (ADF&G) are located east of the project area. Steller sea lions may aggregate near the mouth of Ketchikan Creek, where a hatchery upstream supports a summer salmon run. The Creek mouth is more than 9 kilometers (5.5 miles) east of the entrance to Ward Cove.

Potential Effects of Specified Activities on Marine Mammals and their Habitat

The effects of underwater noise from PSSA's construction activities have the potential to result in behavioral harassment of marine mammals in the vicinity of the survey area. The notice of proposed IHA (85 FR 12523; March 3, 2020) included a discussion of the effects of anthropogenic noise on marine mammals and the potential effects of underwater noise from PSSA's survey activities on marine mammals and their habitat. That information and analysis is incorporated by reference into this final IHA

determination and is not repeated here; please refer to the notice of proposed IHA (85 FR 12523; March 3, 2020).

Estimated Take

This section provides an estimate of the number of incidental takes authorized through this IHA, which will inform both NMFS' consideration of "small numbers" and the negligible impact determination.

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines "harassment" as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Authorized takes would primarily be by Level B harassment, as use of the acoustic source (*i.e.*, vibratory or impact pile driving or DTH) has the potential to result in disruption of behavioral patterns for individual marine mammals. There is also some potential for auditory injury (Level A harassment) to result for pinnipeds because predicted auditory injury zones are larger and harbor seals are the only animals routinely seen in Ward Cove. The mitigation and monitoring measures are expected to minimize the severity of the taking to the extent practicable.

As described previously, no mortality is anticipated or authorized for this activity. Below we describe how the take is estimated.

Generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) and the number of days of activities. We note that while these basic factors can contribute to a basic calculation to provide an initial prediction of takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.*, previous monitoring results or average group size). Due to the lack of marine mammal density, NMFS relied on local occurrence data and group size to estimate take. Below, we describe the factors considered here in more detail and present the take estimate.

Acoustic Thresholds

Using the best available science, NMFS has developed acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur Permanent Threshold Shift (PTS) of some degree (equated to Level A harassment).

Level B Harassment for non-explosive sources – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (*e.g.*, frequency, predictability, duty cycle), the environment (*e.g.*, bathymetry), and the receiving animals (*e.g.*, hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.*, 2007, Ellison *et al.*, 2012). Based on what the

available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals are likely to be behaviorally harassed in a manner we consider Level B harassment when exposed to underwater anthropogenic noise above received levels of 120 dB re 1 microPascal (μPa) (root mean square (rms)) for continuous (*e.g.*, vibratory pile-driving, drilling) and above 160 dB re 1 μPa (rms) for non-explosive impulsive (*e.g.*, impact pile driving) or intermittent (*e.g.*, scientific sonar) sources.

PSSA's proposed activity includes the use of continuous (vibratory pile-driving, DTH) and impulsive (impact pile-driving) sources, and therefore the 120 and 160 dB re 1 μPa (rms) thresholds are applicable.

Level A harassment for non-explosive sources - NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). PSSA's activity includes the use of impulsive (impact pile-driving, as well as DTH hammering, which includes impulsive components) and non-impulsive (vibratory pile driving/removal and drilling) sources.

These thresholds are provided in Table 2. The references, analysis, and methodology used in the development of the thresholds are described in NMFS 2018 Technical Guidance, which may be accessed at

<https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance>.

Table 2 -- Thresholds Identifying the Onset of Permanent Threshold Shift

	PTS Onset Acoustic Thresholds[*] (Received Level)	
Hearing Group	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	<i>Cell 1</i> $L_{pk,flat}$: 219 dB $L_{E,LF,24h}$: 183 dB	<i>Cell 2</i> $L_{E,LF,24h}$: 199 dB
Mid-Frequency (MF) Cetaceans	<i>Cell 3</i> $L_{pk,flat}$: 230 dB $L_{E,MF,24h}$: 185 dB	<i>Cell 4</i> $L_{E,MF,24h}$: 198 dB
High-Frequency (HF) Cetaceans	<i>Cell 5</i> $L_{pk,flat}$: 202 dB $L_{E,HF,24h}$: 155 dB	<i>Cell 6</i> $L_{E,HF,24h}$: 173 dB
Phocid Pinnipeds (PW) (Underwater)	<i>Cell 7</i> $L_{pk,flat}$: 218 dB $L_{E,PW,24h}$: 185 dB	<i>Cell 8</i> $L_{E,PW,24h}$: 201 dB
Otariid Pinnipeds (OW) (Underwater)	<i>Cell 9</i> $L_{pk,flat}$: 232 dB $L_{E,OW,24h}$: 203 dB	<i>Cell 10</i> $L_{E,OW,24h}$: 219 dB
<p>* Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds should also be considered.</p> <p><u>Note:</u> Peak sound pressure (L_{pk}) has a reference value of 1 μPa, and cumulative sound exposure level (L_E) has a reference value of 1 μPa²s. In this Table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for this Technical Guidance. Hence, the subscript “flat” is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (<i>i.e.</i>, varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.</p>		

Ensonified Area

Here, we describe operational and environmental parameters of the activity that will feed into identifying the area ensonified above the acoustic thresholds, which include source levels and transmission loss coefficient.

The sound field in the project area is the existing background noise plus additional construction noise from the proposed project. Marine mammals are expected to be affected via sound generated by the primary components of the project (*i.e.*, impact pile driving, vibratory pile driving, vibratory pile removal, and DTH).

Vibratory hammers produce constant sound when operating, and produce vibrations that liquefy the sediment surrounding the pile, allowing it to penetrate to the required seating depth. An impact hammer would then generally be used to place the pile at its intended depth through rock or harder substrates. The actual durations of each installation method vary depending on the type and size of the pile. An impact hammer is a steel device that works like a piston, producing a series of independent strikes to drive the pile. Impact hammering typically generates the loudest noise associated with pile installation.

In order to calculate distances to the Level A harassment and Level B harassment sound thresholds for piles of various sizes being used in this project, NMFS used acoustic monitoring data from other locations to develop source levels (see Table 3). Note that piles of differing sizes have different sound source levels (SSLs).

Empirical data from recent Alaska Department of Transportation (ADOT&PF) sound source verification (SSV) studies at Ketchikan were used to estimate sound source levels for vibratory driving of 30-inch steel pipe piles. Data from Ketchikan was used because of its proximity to this project in Tongass. Data from Anchorage were used for

vibratory driving of 36 and 48-inch piles and for impact driving of 30, 36, and 48-inch piles (Austin *et al.* 2016). Source levels from 48-inch piles were used as a proxy for the 30 and 36-inch piles for impact pile driving and for the 36-inch piles for vibratory driving, making those estimated source levels conservative.

For DTH for rock anchoring, source level data from a project in Kodiak were used for the continuous characteristics of DTH (Denes *et al.* 2016) and data from Denes *et al.* (2019) were used for the impulsive characteristics. The reported median source value for DTH from Denes *et al.* (2016) was 166.2 dB rms for all pile types (see Table 72).

Table 3 -- Estimates of Underwater Sound Levels Generated During Vibratory and Impact Pile Installation, Drilling, and Vibratory Pile Removal

Method and Pile Type	Sound Source Level at 10 meters	Literature Source
Vibratory Hammer	dB rms	
30-inch steel piles	161.9	Denes <i>et al.</i> 2016, Table 72
36-inch steel piles	168.2	Austin <i>et al.</i> 2016, Table 16
48-inch steel piles	168.2	Austin <i>et al.</i> 2016, Table 16
DTH Rock Anchors (Continuous)	dB rms	
All pile diameters	166.2	Denes <i>et al.</i> 2016, Table 72

DTH Rock			
Anchors (Impulsive)	dB peak	db RMS	dB SS SEL
All pile diameters	190	180	164
Impact Hammer	dB peak		dB SS SEL
All pile diameters	212.5		186.7
			Denes <i>et al.</i> 2019
			Austin <i>et al.</i> 2016, Tables 7, 9

Note: It is assumed that noise levels during pile installation and removal are similar. Use of an impact hammer will be limited to 5-10 minutes per pile, if necessary. It is assumed that drilling produces the same SSL for both pile diameters. SS SEL = single strike sound exposure level; dB peak = peak sound level; rms = root mean square.

Level B Harassment Zones

Transmission loss (TL) is the decrease in acoustic intensity as an acoustic pressure wave propagates out from a source. TL parameters vary with frequency, temperature, sea conditions, current, source and receiver depth, water depth, water chemistry, and bottom composition and topography. The general formula for underwater TL is:

$$TL = B * \text{Log}_{10} (R1/R2), \text{ where}$$

TL = transmission loss in dB

B = transmission loss coefficient; for practical spreading equals 15

R1 = the distance of the modeled sound pressure level (SPL) from the driven pile,

and

R2 = the distance from the driven pile of the initial measurement

The recommended TL coefficient for most nearshore environments is the, practical spreading value of 15. This value results in an expected propagation

environment that would lie between spherical and cylindrical spreading loss conditions, which is the most appropriate assumption for PSSA's proposed activity.

Using the practical spreading model, PSSA determined underwater noise would fall below the behavioral effects threshold of 120 dB rms for marine mammals at a maximum radial distance of 16,343 m for vibratory pile driving the 36 and 48-inch diameter piles. This distance determines the maximum Level B harassment zone for the project. Other activities, including rock anchoring (DTH) and impact pile driving, have smaller Level B harassment zones. All Level B harassment isopleths are reported in Table 4 below and visualized in Figure 6 and Table 5 in the IHA application. It should be noted that based on the geography of Ward Cove, Tongass Narrows and the surrounding islands, sound will not reach the full distance of the Level B harassment isopleth. Generally, due to interaction with land, only a thin slice of the possible area is ensonified and the maximum distance before reaching land barriers is 3,645 m.

Table 4 -- Calculated Distances to Level B Harassment Isopleths During Pile Installation and Removal

Pile Size	Level B Isopleth (m)
Vibratory Pile Driving/Removal	
30-inch piles	6,213
36-inch piles	16,343
48-inch piles	16,343
Impact Pile Driving	
30-inch piles	3,744
36-inch piles	3,744
48-inch piles	3,744
Rock Anchoring (DTH)	
36-inch piles	12,023
48-inch piles	12,023

Level A Harassment Zones

When the NMFS Technical Guidance (2016) was published, in recognition of the fact that ensonified area/volume could be more technically challenging to predict because of the duration component in the new thresholds, we developed a User Spreadsheet that includes tools to help predict a simple isopleth that can be used in conjunction with marine mammal density or occurrence to help predict takes. We note that because of some of the assumptions included in the methods used for these tools, we anticipate that isopleths produced are typically going to be overestimates of some degree, which may result in some degree of overestimate of take by Level A harassment. However, these tools offer the best way to predict appropriate isopleths when more sophisticated 3D modeling methods are not available, and NMFS continues to develop ways to quantitatively refine these tools, and will qualitatively address the output where appropriate. For stationary sources such as impact/vibratory pile driving or drilling, NMFS User Spreadsheet predicts the closest distance at which, if a marine mammal remained at that distance the whole duration of the activity, it would not incur PTS.

Inputs used in the User Spreadsheet (Table 5), and the resulting isopleths are reported below (Table 6). Level A harassment thresholds for impulsive sound sources (impact pile driving) are defined for both SELcum (cumulative sound exposure levels) and Peak SPL, with the threshold that results in the largest modeled isopleth for each marine mammal hearing group used to establish the Level A harassment isopleth. In this project, Level A harassment isopleths based on SELcum were always larger than those based on Peak SPL.

Table 5 -- Parameters of Pile Driving and Drilling Activity used in User Spreadsheet

Equipment Type	Vibratory Pile Driver (Installation/ Removal of 30-inch steel piles)	Vibratory Pile Driver (Installation of 36 and 48-inch steel piles)	Impact Pile Driver (30-inch steel piles)	Impact Pile Driver (36 and 48-inch steel piles)	Rock Anchor (DTH) (36-inch steel piles)	Rock Anchor (DTH) (36-inch steel piles)	Rock Anchor (DTH) (48-inch steel piles)	Rock Anchor (DTH) (48-inch steel piles)
Spreadsheet Tab Used	Non-impulsive, continuous	Non-impulsive, continuous	Impulsive, Non-continuous	Impulsive, Non-continuous	Continuous	Impulsive	Continuous	Impulsive
Source Level	161.9 SPL	168.2 SPL	186.7 SS SEL*	186.7 SS SEL*	166.2 SPL	164 SS SEL*	166.2 SPL	164 SS SEL*
Weighting Factor Adjustment (kHz)	2.5	2.5	2	2	2.5	2	2.5	2
(a) Activity duration (time) within 24 hours (b) Number of strikes per pile (impact) (c) Number of piles per day	(a) 0:40 (10 mins *4) (c) 4	(a) 1:00 (30 mins *2) (c) 2	(b) 40 (c) 2	(b) 100 (c) 2	(a) 8:00 (240 mins *2) (c) 2	(b) (c) 2	(a) 5:00 (300 mins *1) (c) 1	(b) (c) 1
Propagation (xLogR)	15	15	15	15	15	15	15	15
Distance of source level measurement (meters)	10	10	11	11	10	10	10	10

Note: Data for all equipment types were for Propagation (xLogR) = 15 and distance of source level measurements was 10 meters.

* Largest isopleth distances for impact pile driving and DTH were all found when using SS SEL (see application for details) and SEL is the preferred metric.

The above input scenarios lead to a PTS isopleth distance (Level A threshold) of 1.8 to 793 meters, depending on the marine mammal group and scenario (Table 6).

Table 6 -- Calculated Distances to Level A Harassment Isopleths (m) During Pile Installation and Removal for each Hearing Group

Pile Size	Low Frequency	Mid Frequency	High Frequency	Phocid	Otariid
Vibratory Pile Driving/Removal					
30-inch piles	6	0.5	8.8	3.6	0.3
36-inch piles	20.6	1.8	30.5	12.5	0.9
48-inch piles	20.6	1.8	30.5	12.5	0.9
Impact Pile Driving					
30-inch piles	359.9	12.8	428.7	192.6	14

36-inch piles	663	23.6	789.7	354.8	25.8
48-inch piles	663	23.6	789.7	354.8	25.8
Rock Anchoring (DTH)					
36-inch piles	665	24	793	356	26
48-inch piles	486	17	579	260	19

Note: a 10-meter shutdown zone will be implemented for all species and activity types to prevent direct injury of marine mammals.

Marine Mammal Occurrence

In this section we provide the information about the presence, density, or group dynamics of harbor seals, Dall's porpoise, and harbor porpoises that will inform the take calculations. There is no density data for any of the species near Ward Cove.

Harbor Seal

As discussed above anecdotal evidence suggests maximum group size is up to three individuals in Ward Cove at one time. They are known to occur year-round in the area with little seasonal variation in abundance (Freitag (2017) as cited in 83 FR 37473, August 1, 2018) and local experts estimate that there are about one to three harbor seals in Tongass Narrows every day. To be conservative we will assume a group size of five individuals in the project area each day.

Dall's Porpoise

Dall's porpoises are expected to only occur in the action area a few times per year. Their relative rarity is supported by Jefferson *et al.*'s (2019) presentation of historical survey data showing very few sightings in the Ketchikan area and conclusion that Dall's porpoise generally are rare in narrow waterways, like the Tongass Narrows. This species is non-migratory; therefore, our occurrence estimates are not dependent on season. We anticipate that one large Dall's porpoise pod (15 individuals) (Freitag (2017),

as cited in 83 FR37473, August 1, 2018) may be present in the project area once each month during construction.

Harbor Porpoise

Harbor porpoises are non-migratory; therefore, our occurrence estimates are not dependent on season. Freitag ((2017) as cited in 83 FR 37473, August 1, 2018) observed harbor porpoises in Tongass Narrows zero to one time per month. Harbor porpoises observed in the project vicinity typically occur in groups of one to five animals with an estimated maximum group size of eight animals (83 FR 37473, August 1, 2018, Solstice 2018). For our impact analysis, we are considering a group to consist of five animals, a value on the high end of the typical group size. Based on Freitag (2017), and supported by the reports of knowledgeable locals as described in the application for IHA for Tongass Narrows (<https://www.fisheries.noaa.gov/action/incidental-take-authorization-alaska-department-transportation-ferry-berth-improvements>), it is estimated that a maximum two groups (10) of harbor porpoises would enter Tongass Narrows and potentially be exposed to project related noise each of the four months of the project.

Steller's Sea Lion

Steller sea lion abundance in the Tongass Narrows area is not well known. No systematic studies of Steller sea lions have been conducted in or near the Tongass Narrows area. Steller sea lions are known to occur year-round and local residents report observing Steller sea lions about once or twice per week (Tongass Narrows IHA, 2019). Abundance appears to increase during herring runs (March to May) and salmon runs (July to September). Group sizes are generally 6 to 10 individuals (Freitag (2017) as cited in 83 FR 37473, August 1, 2018) but have been reported to reach 80 animals (HDR

2003). Tongass Narrows represents an area of high anthropogenic activity that sea lions would normally avoid, but at least three seafood processing plants and two fish hatcheries may be attractants. Sea lions are generally unafraid of humans when food sources are available. For these reasons, as we did for the Tongass Narrows IHA (2019), we conservatively estimate that one group of 10 Steller sea lions may be present in the project area each day, but this occurrence rate may as much as double (20 Steller sea lions per day) during periods of increased abundance associated with the herring and salmon runs (March to May and July to September).

Take Calculation and Estimation

Here we describe how the information provided above is brought together to produce a quantitative take estimate. As noted above, the applicant only requested take of harbor seals, but we believe the cryptic nature, small size, and dive duration of Dall's porpoise and harbor porpoise, and abundance of Steller's sea lions, make it possible that these three species could also be taken by entering the Level A or Level B harassment zones before shutdown can occur (see below). We describe how we estimated their take below and summarize it in Table 7.

It is important to note that PSSA proposes to implement a shutdown of pile driving activity if any marine mammal other than these four species is observed within the Level B harassment zone (see **Mitigation**). Therefore, the take authorization is intended to provide insurance against the event that marine mammals occur within Level A or Level B harassment zones that cannot be fully observed by monitors. As a result of this mitigation, we do not believe that Level A harassment is a likely outcome for these three species. While the calculated Level A harassment zone is as large as 793 m for

DTH of 36-in steel piles (ranging from 429 m for other impact driving scenarios), this requires that an animal be present at that range for the full assumed duration of pile strikes (expected to require multiple hours). Given the PSSA's commitment to shut down upon observation of other marine mammals, and the rarity of these animals inside Ward Cove where the Level A harassment zones will be, we do not expect that any of these other species would be present within a Level A harassment zone for sufficient duration to actually experience PTS.

Harbor Seals

The take calculation was estimated based on the conservative group size from above (five) multiplied by the number of expected groups per day multiplied by the number of days of pile driving. Based on the anecdotal observations, it is conservatively estimated that two groups of five harbor seals may occur within the Level B harassment zone every day that pile driving may occur. Thus we estimate $5 \text{ animals in a group} \times 2 \text{ groups per day} \times 105 \text{ days} = 1,050$ times animals would occur within the Level B harassment zone. The Level B harassment zones areas for trestle construction and mooring dolphin construction differ in size because more sound is expected to leak out of the cove into Tongass Narrows when construction on the dolphins is toward the middle of the cove (see Figure 6 of application). Nevertheless, it is expected that most of the take will occur within Ward Cove (not Tongass Narrows) where the action areas for trestle and dolphin construction overlap and are identical in size, so take is not reduced despite the smaller area of trestle effects.

The Level A harassment zone for harbor seals for impact pile driving of 30-inch piles is 193 meters, for impact driving of 36 and 48-inch piles, the zone is 355 meters,

and for the DTH scenarios it is 260 – 356 meters. For other pile driving activities the zones are much smaller. Impact pile driving and DTH hammering would be shut down before a harbor seal enters within 200 meters during these activities; however, take by Level A harassment of harbor seals is requested outside the 200 m shutdown zone for larger piles with zones exceeding 200 m. Impact driving would occur for no more than 10 minutes per day on 20 days of construction and DTH would occur for no more than 48 minutes per day on 20 days of construction. As above we use group size of five individuals and expect one group per day to be exposed in the Level A harassment zone. Although mere “exposure” within the Level A harassment zone is not indicative of an animal incurring auditory injury due to the fact that injury results from accumulation of energy over an assumed duration of exposure, we conservatively authorize 100 Level A harassment takes of harbor seal (5 animals in a group x 1 groups per day x 20 days = 100 animals). Because these animals exposed in the Level A harassment zone duplicate those exposed in the Level B zone, the authorized Level B harassment take is the number of Level B harassment zone exposures minus the Level A take or 950 animals (1050-100).

Dall’s Porpoise

As discussed above we assume a single group of 15 individuals in the project area each month. The take calculation was estimated based on the conservative group size from above (15) multiplied by the number of expected groups per month (1) multiplied by the number of months of pile driving for the project (4). Thus we estimate a total of 60 individuals (15 x 1 x 4) may enter the Level B harassment zone. The Level A harassment zones for Dall’s porpoises for impact pile driving of 30-inch piles is 429 meters, for impact driving of 36 and 48-inch piles, the zone is 790 meters, and for the DTH scenarios

it is 579 – 793 meters. Impact pile driving and DTH hammering would be shut down before a Dall's porpoise enters within 200 meters during these activities; however, take by Level A harassment of Dall's porpoises is requested for outside the 200 m shutdown zone for those activities with zones exceeding 200 m. We conservatively estimate that 15 individuals could be exposed to levels above the Level A harassment threshold, potentially in the form of one group entering and remaining in the Level A harassment zone long enough to be exposed above the threshold, or in the form of some smaller number being exposed in the same manner on multiple days. Thus, we authorize 15 Level A harassment takes of Dall's porpoise. Because these animals exposed in the Level A harassment zone are assumed to be a subset of those predicted to be exposed in the Level B zone, the authorized Level B harassment take is the number of Level B harassment zone exposures minus the Level A take or 45 animals (60-15).

Harbor Porpoise

As discussed above we assume a conservative group size of five individuals occurring no more than twice in the project area each month. The take calculation was estimated based on the group size from above (5) multiplied by the number of expected groups per month (2) multiplied by the number of months of pile driving for the project (4). Thus we estimate a total of 40 individuals ($5 \times 2 \times 4$) may enter the Level B harassment zone. The Level A harassment zones for harbor porpoises for impact pile driving of 30-inch piles is 429 meters, for impact driving of 36 and 48-inch piles, the zone is 790 meters, and for the DTH scenarios it is 579 – 793 meters. Impact pile driving and DTH hammering would be shut down before a harbor porpoise enters within 200 meters during these activities; however, take by Level A harassment of harbor porpoises

is requested for outside the 200 m shutdown zone for those activities with zones exceeding 200 m. We conservatively estimate three groups of five individuals could be exposed in the Level A harassment zone. Thus, we authorize 15 Level A harassment takes of harbor porpoises. Because these animals exposed in the Level A harassment zone duplicate those exposed in the Level B zone, the authorized Level B harassment take is the number of Level B harassment zone exposures minus the Level A take or 25 animals (40-15).

Steller's Sea Lions

As described above, we anticipate that one large group (10 individuals) may be present in the Level B harassment zone once per day. However, as discussed above, we anticipate that exposure may be as much as twice this rate during March, April, May, July, August, and September, due to the increased presence of prey. Therefore, we anticipate that two large groups (20 individuals) may be present in the Level B harassment zone each day during these months. We anticipate 25 days of activity during June when there are 10 Level B harassment zone incursions per day and the rest of the project will be completed during the months when there are 20 incursions per day. Therefore, we estimate a total of 1,850 potential takes of Steller sea lions by Level B harassment (*i.e.*, 10 sea lions per day for 25 days (250) + 20 sea lions per day for 80 days (1600) = 1850 sea lions).

Table 7 -- Authorized Amount of Taking, by Level A Harassment and Level B Harassment, by Species and Stock and Percent of Stock Taken

	Authorized Take		Percent of Stock
	Level B	Level A	
Dall's porpoise (<i>Phocoenoides dalli</i>) Alaska	45	15	

Stock			<1
Harbor porpoise (<i>Phocoena phocoena</i>) Southeast Alaska Stock	25	15	4.1
Harbor seal (<i>Phoca vitulina</i>) Clarence Strait Stock	950	100	3.8
Steller sea lion (<i>Eumetopias jubatus</i>) Eastern DPS Stock	1850	0	4.3

Effects of Specified Activities on Subsistence Uses of Marine Mammals

The availability of the affected marine mammal stocks or species for subsistence uses may be impacted by this activity. The subsistence uses that may be affected and the potential impacts of the activity on those uses are described below. The information from this section is analyzed to determine whether the necessary findings may be made in the **Unmitigable Adverse Impact Analysis and Determination** section.

Subsistence harvest of harbor seals by Alaska Natives is not prohibited by the MMPA. Since surveys of harbor seal subsistence harvest in Alaska began in 1992, there have been declines in the number of households hunting and harvesting seals in Southeast Alaska (Wolf *et al.* 2013). Subsistence harvest data for the Clarence Strait stock indicates an average annual harvest in the years 2004-2008 of 164 harbor seals (80 near Ketchikan) and an average annual harvest in the years 2011-2012 of 40 harbor seals (summarized in Muto *et al.* 2016a from Wolf *et al.* 2013). In 2008, two Steller sea lions were harvested by Ketchikan-based subsistence hunters, but this is the only record of sea lion harvest by residents of Ketchikan. In 2012, the community of Ketchikan had an estimated subsistence take of 22 harbor seals (Wolf *et al.* 2013). This is the most recent data for Ketchikan. The ADF&G has not recorded harvest of cetaceans in the area (ADF&G 2018). Hunting usually occurs in October and November (ADF&G 2009), but there are also records of relatively high harvest in May (Wolfe *et al.* 2013).

In June 2019, attempts were made by PSSA to contact the Alaska Harbor Seal Commission, the Alaska Sea Otter and Steller Sea Lion Commission, and the Ketchikan Indian Community (KIC, Federal-recognized Tribe) to discuss this project. The Alaska Harbor Seal Commission is currently not operational. Comments were not received from the Alaska Sea Otter and Steller Sea Lion Commission. PSSA met with KIC and KIC submitted comments for the Army Corps of Engineers permit for this project. They did not express concerns about subsistence hunting.

Construction activities at the project site would be expected to cause only short term, non-lethal disturbance of marine mammals. Construction activities are localized and temporary in the previously developed Ward Cove, mitigation measures will be implemented to minimize disturbance of marine mammals in the action area, and, the project will not result in significant changes to availability of subsistence resources. Impacts on the abundance or availability of either species to subsistence hunters in the region are thus not anticipated.

Mitigation

In order to issue an IHA under Section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses. NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting the activity or other means of effecting the least

practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider two primary factors:

(1) the manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat, as well as subsistence uses. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned), and;

(2) the practicability of the measures for applicant implementation, which may consider such things as cost, impact on operations, and, in the case of a military readiness activity, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

The following mitigation measures are in the IHA:

- *Schedule*: Pile driving or removal must occur during daylight hours. If poor environmental conditions restrict visibility (*e.g.*, from excessive wind or fog, high Beaufort state), pile installation would be delayed;
- *Pile Driving Delay/Shut-Down*: For use of in-water heavy machinery/vessel (*e.g.*, dredge), PSSA must implement a minimum shutdown zone of 10 m radius around the pile/vessel. For vessels, PSSA must cease operations and reduce

vessel speed to the minimum required to maintain steerage and safe working conditions.

In addition, if an animal comes within the shutdown zone (see Table 8) of a pile being driven or removed, PSSA would shut down. The shutdown zone would only be reopened if they observe the animal exiting the zone or when a marine mammal has not been observed within the shutdown zone for a 15-minute period. If DTH or pile driving is stopped, pile installation would not commence if any marine mammals are observed anywhere within the Level A harassment zone. Pile driving activities must only be conducted during daylight hours when it is possible to visually monitor for marine mammals. If a species for which authorization has not been granted, or if a species for which authorization has been granted but the authorized takes are met, PSSA must delay or shut-down pile driving if the marine mammal approaches or is observed within the Level A and/or B harassment zones.

Table 8 -- Shutdown and Monitoring Zones for Each Activity Type and Stock

Pile Size	Harbor Seal Shutdown Distance (m)	Harbor porpoise, Dall's porpoise Shutdown Distance (m)	Steller Sea lion Shutdown Distance (m)	Other Marine Mammal Shutdown Distance (m)	Level B Monitoring Zone (m)
Vibratory Pile Driving/Removal					
30-inch piles	10	10	10	3,645	3,645
36-inch piles	15	40	10	3,645	3,645
48-inch piles	15	40	10	3,645	3,645
Impact Pile Driving					
30-inch piles	200	200	20	3,645	3,645
36-inch piles	200	200	30	3,645	3,645
48-inch piles	200	200	30	3,645	3,645
Rock Anchoring (DTH)					
36-inch piles	200	200	30	3,645	3,645
48-inch piles	200	200	20	3,645	3,645
All Other Activities					
Any activity	10	10	10	N/A	N/A

Note: A Level A monitoring zone is implemented for DTH and impact pile driving of 30 to 48-inch diameter piles out to the extent of the Level A harassment zone (793 m). Level B monitoring zone (for the four species with authorized take) and other marine mammal shutdown distance of 3,645 m reflects the farthest distance before sound is inhibited by land.

- *Soft-start:* For all impact pile driving, a “soft start” technique must be used at the beginning of each pile installation day, or if pile driving has ceased for more than 30 minutes, to allow any marine mammal that may be in the immediate area to leave before hammering at full energy. The soft start requires PSSA to provide an initial set of three strikes from the impact hammer at reduced energy, followed by a 30 second waiting period, then two subsequent three–strike sets. If any marine mammal is sighted within the Level A shutdown zone prior to pile-driving, or during the soft start, PSSA must delay pile-driving until the animal is confirmed to have moved outside and is on a path away from the Level A harassment zone or if 15 minutes have elapsed since the last sighting;
- *Sediment control:* All material that comes out of the top of the pile during pile driving (drill cutting discharge) must be collected on a barge and transported to a permitted upland location for disposal. Pile driving, temporary pile removal, and collection of excavated material operations must be surrounded by a 50-foot (15 m) deep silt curtain; and
- *Other best management practices:* PSSA will drive all piles with a vibratory hammer to the maximum extent possible (*i.e.*, until a desired depth is achieved or to refusal) prior to using an impact hammer. PSSA will also use the minimum hammer energy needed to safely install the piles.

Based on our evaluation of the applicant’s proposed measures, NMFS has determined that the mitigation measures provide the means effecting the least practicable impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for subsistence uses.

Monitoring and Reporting

In order to issue an IHA for an activity, Section 101(a)(5)(D) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the proposed action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas);
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors;

- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and
- Mitigation and monitoring effectiveness.

Visual Monitoring

Monitoring must be conducted 30 minutes before, during, and 30 minutes after pile driving and removal activities. In addition, observers shall record all incidents of marine mammal occurrence, regardless of distance from activity, and shall document any behavioral reactions in concert with distance from piles being driven or removed. Pile driving activities include the time to install a single pile or series of piles, as long as the time elapsed between uses of the pile driving equipment is no more than 30 minutes.

Four PSO's will be used to monitor the project and their locations are shown in Figure 12 of the monitoring plan. A primary PSO must be placed near the project site in Ward Cove where pile driving would occur. The primary purpose of this observer is to monitor and implement the Level A shutdown and monitoring zones. Three additional PSOs must be positioned in order to focus on monitoring the Level B harassment and other species shutdown zone. PSOs would scan the waters using binoculars, and/or spotting scopes, and would use a handheld GPS or range-finder device to verify the distance to each sighting from the project site. All PSOs would be trained in marine mammal identification and behaviors and are required to have no other project-related tasks while conducting monitoring. The following measures also apply to visual monitoring:

(1) Monitoring must be conducted by NMFS-approved qualified observers, who will be placed at the best vantage point(s) practicable to monitor for marine mammals and implement shutdown/delay procedures when applicable by calling for the shutdown to the hammer operator. Qualified observers are trained biologists, with the following minimum qualifications:

(a) Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface with ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target;

(b) Advanced education in biological science or related field (undergraduate degree or higher required);

(c) Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience);

(d) Experience or training in the field identification of marine mammals, including the identification of behaviors;

(e) Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;

(f) Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates and times when in-water construction activities were suspended to avoid potential incidental injury from construction sound of marine mammals observed within a defined shutdown zone; and marine mammal behavior; and

(g) Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary; and

(2) PSSA shall submit observer Curriculum vitae for approval by NMFS.

A draft marine mammal monitoring report would be submitted to NMFS within 90 days after the completion of pile driving and removal activities, or 60 days prior to a requested date of issuance of any future IHAs for projects at the same location, whichever comes first. It will include an overall description of work completed, a narrative regarding marine mammal sightings, and associated marine mammal observation data sheets. Specifically, the report must include:

- Dates and times (begin and end) of all marine mammal monitoring;
- Construction activities occurring during each daily observation period, including how many and what type of piles were driven or removed and by what method (*i.e.*, impact or vibratory);
- Weather parameters and water conditions during each monitoring period (*e.g.*, wind speed, percent cover, visibility, sea state);
- The number of marine mammals observed, by species, relative to the pile location and if pile driving or removal was occurring at time of sighting;
- Age and sex class, if possible, of all marine mammals observed;
- PSO locations during marine mammal monitoring;
- Distances and bearings of each marine mammal observed to the pile being driven or removed for each sighting (if pile driving or removal was occurring at time of sighting);

- Description of any marine mammal behavior patterns during observation, including direction of travel and estimated time spent within the Level A and Level B harassment zones while the source was active;
- Number of individuals of each species (differentiated by month as appropriate) detected within the monitoring zone, and estimates of number of marine mammals taken, by species (a correction factor may be applied to total take numbers, as appropriate);
- Detailed information about any implementation of any mitigation triggered (*e.g.*, shutdowns and delays), a description of specific actions that ensued, and resulting behavior of the animal, if any;
- Description of attempts to distinguish between the number of individual animals taken and the number of incidences of take, such as ability to track groups or individuals; and
- An extrapolation of the estimated takes by Level B harassment based on the number of observed exposures within the Level B harassment zone and the percentage of the Level B harassment zone that was not visible, when applicable.

If no comments are received from NMFS within 30 days, the draft final report will constitute the final report. If comments are received, a final report addressing NMFS comments must be submitted within 30 days after receipt of comments.

Reporting Injured or Dead Marine Mammals

In the event that personnel involved in the construction activities discover an injured or dead marine mammal, PSSA shall report the incident to the Office of Protected

Resources (OPR), NMFS and to the regional stranding coordinator as soon as feasible. If the death or injury was clearly caused by the specified activity, the IHA-holder must immediately cease the specified activities until NMFS is able to review the circumstances of the incident and determine what, if any, additional measures are appropriate to ensure compliance with the terms of the IHA. The IHA-holder must not resume their activities until notified by NMFS. The report must include the following information:

- Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
- Species identification (if known) or description of the animal(s) involved;
- Condition of the animal(s) (including carcass condition if the animal is dead);
- Observed behaviors of the animal(s), if alive;
- If available, photographs or video footage of the animal(s); and
- General circumstances under which the animal was discovered.

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be “taken” through harassment, NMFS considers other factors, such as the likely nature of any responses (*e.g.*, intensity, duration), the context of any responses

(*e.g.*, critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS's implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

Pile driving and drilling activities have the potential to disturb or displace marine mammals and, infrequently, cause low levels of permanent hearing impairment. Specifically, the project activities may result in take, in the form of Level A harassment and Level B harassment from underwater sounds generated from pile driving and removal and DTH. Potential takes could occur if individuals are present in the ensonified zone when these activities are underway.

The takes from Level A and Level B harassment will be due to potential behavioral disturbance, TTS, and PTS. No mortality is anticipated given the nature of the activity and measures designed to minimize the possibility of injury to marine mammals. The potential for harassment is minimized through the construction method and the implementation of the planned mitigation measures (see **Mitigation** section).

The Level A harassment zones identified in Table 8 are based upon an animal exposed to impact pile driving multiple piles per day. Considering duration of impact driving each pile (up to 3 minutes) and breaks between pile installations (to reset equipment and move pile into place), this means an animal would have to remain within

the area estimated to be ensonified above the Level A harassment threshold for multiple hours. This is highly unlikely given marine mammal movement throughout the area. If an animal was exposed to accumulated sound energy, the resulting PTS would likely be small (*e.g.*, PTS onset) at lower frequencies where pile driving energy is concentrated.

Behavioral responses of marine mammals to pile driving at the project site, if any, are expected to be mild and temporary. Marine mammals within the Level B harassment zone may not show any visual cues they are disturbed by activities (as noted during modification to the Kodiak Ferry Dock) or could become alert, avoid the area, leave the area, or display other mild responses that are not observable such as changes in vocalization patterns. Given the short duration of noise-generating activities per day and that pile driving and removal will occur across 4-5 months, any harassment would be temporary. There are no other areas or times of known biological importance for any of the affected species.

In addition, it is unlikely that minor noise effects in a small, localized area of habitat would have any effect on the stocks' ability to recover. In combination, we believe that these factors, as well as the available body of evidence from other similar activities, demonstrate that the potential effects of the specified activities will have only minor, short-term effects on individuals that would not impact the fitness of any individuals. The specified activities are not expected to impact rates of recruitment or survival and will therefore not result in population-level impacts.

In summary and as described above, the following factors primarily support our determination that the impacts resulting from this activity are not expected to adversely affect the species or stock through effects on annual rates of recruitment or survival:

- No serious injury or mortality is anticipated or authorized;
- Authorized Level A harassment will be small amounts and of low degree;
- PSSA will implement mitigation measures such as vibratory driving piles to the maximum extent practicable, soft-starts, silt curtains, removal of potentially contaminated sediments, and shut downs; and
- Monitoring reports from similar work in Alaska have documented little to no effect on individuals of the same species impacted by the specified activities.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the proposed monitoring and mitigation measures, NMFS finds that the total marine mammal take from the proposed activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under Section 101(a)(5)(D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

The amount of take NMFS proposes to authorize is less than one third for all stocks (in fact, less than 5 percent for harbor seals, Steller sea lions, and harbor

porpoises). The Alaska stock of Dall's porpoise has no official NMFS abundance estimate as the most recent estimate is greater than eight years old. Nevertheless, the most recent estimate was 83,400 animals and it is highly unlikely this number has drastically declined. Therefore, the 60 authorized takes of this stock clearly represent small numbers of this stock. These are all likely conservative estimates because they assume all takes are of different individual animals which is likely not the case. Some individuals may return across multiple days but have been included as separate instances of take in our estimates.

Based on the analysis contained herein of the proposed activity (including the proposed mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

In order to issue an IHA, NMFS must find that the specified activity will not have an "unmitigable adverse impact" on the subsistence uses of the affected marine mammal species or stocks by Alaskan Natives. NMFS has defined "unmitigable adverse impact" in 50 CFR 216.103 as an impact resulting from the specified activity: (1) That is likely to reduce the availability of the species to a level insufficient for a harvest to meet subsistence needs by: (i) Causing the marine mammals to abandon or avoid hunting areas; (ii) Directly displacing subsistence users; or (iii) Placing physical barriers between the marine mammals and the subsistence hunters; and (2) That cannot be sufficiently mitigated by other measures to increase the availability of marine mammals to allow subsistence needs to be met.

As discussed above in the **Effects of Specified Activities on Subsistence Uses of Marine Mammals** section, subsistence harvest of harbor seals and other marine mammals is rare in the area and local subsistence users have not expressed concern about this project. All project activities will take place within the industrial area of Tongass Narrows and Ward Cove immediately adjacent to Ketchikan where subsistence activities do not generally occur. The project also will not have an adverse impact on the availability of marine mammals for subsistence use at locations farther away, where these construction activities are not expected to take place. Some minor, short-term harassment of the harbor seals could occur, but any effects on subsistence harvest activities in the region will be minimal, and not have an adverse impact.

Based on the effects and location of the specified activity, and the mitigation and monitoring measures, NMFS has determined that there will not be an unmitigable adverse impact on subsistence uses from PSSA's planned activities.

National Environmental Policy Act

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) and NOAA Administrative Order (NAO) 216-6A, NMFS must review our proposed action (*i.e.*, the issuance of an IHA) with respect to potential impacts on the human environment. This action is consistent with categories of activities identified in Categorical Exclusion B4 (IHAs with no anticipated serious injury or mortality) of the Companion Manual for NOAA Administrative Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has

determined that the issuance of the IHA qualifies to be categorically excluded from further NEPA review.

Endangered Species Act (ESA)

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA: 16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally, in this case with the Alaska Region Protected Resources Division Office, whenever we propose to authorize take for endangered or threatened species.

No incidental take of ESA-listed species is proposed for authorization or expected to result from this activity. Therefore, NMFS has determined that formal consultation under section 7 of the ESA is not required for this action.

Authorization

NMFS has issued an IHA to PSSA for the potential harassment of small numbers of three marine mammal species incidental to the Ward Cove Cruise Ship Dock project near Ketchikan, Alaska, provided the previously mentioned mitigation, monitoring and reporting requirements are incorporated.

Dated: May 18, 2020.

Donna S. Wieting,

Director, Office of Protected Resources,

National Marine Fisheries Service.

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